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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,947	10/19/2006	Heide-Anna Gotz	4662-221	5683
23117	7590	06/05/2009	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				TISCHLER, FRANCES
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
06/05/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/587,947	GOTZ ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	FRANCES TISCHLER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 14 April 2009.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-22 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____ .                        |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 4/14/09 has been entered.

### ***Claim Objections***

Claim 19 is objected to because of the following informalities: it is a duplicate of claim 3. Appropriate correction is required.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 102/103***

**Claims 1 – 3, 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bonte et al (US 6,380,290).**

Applicant claims a process for preparing a block copolyetherester elastomer comprising polyester blocks and poly(alkylene oxide) polyol blocks of:

- at least one aromatic dicarboxylic acid or ester derivative thereof,
- at least one alkylene diol,
- a poly(alkylene oxide) polyol, comprising a poly(propylene oxide) end-capped with ethylene oxide,
- an ethylene oxide content of 22 – 90%, 30 to 70% and 40 – 60% by weight relative to the total weight of the poly(alkylene oxide) polyol,
- an unsaturation of the poly(alkylene oxide) polyol, being the total content of vinyl and allyl groups, of less than 35 meq per Kg of the polyol.
- the ratio by weight of poly(ethylene oxide) polyol/aromatic dicarboxylic acid of between 50/50 and 90/10.
- a Mn of 2500 – 5000 g/mol of the poly(alkylene oxide) polyol.

Bonte discloses (abstract, column 1, lines 55 to end, column 2, lines 7 – 10, claim 1) a polyetherester copolymer derived from:

- Terephthalic acid or naphthalene dicarboxylic acid or an ester thereof,
- Alkylene diol,
- Polypropylene oxide glycol which contains ethylene oxide end groups,
- optionally, branching agents, stabilizers and other additives,
- ratio between propylene oxide to ethylene oxide range form 20:1 to 1:6.

Bonte discloses the same components claimed by applicant, including ethylene oxide end groups. Bonte's ratio between the number of EO to PO can

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be up to 6:1, or up 85% ethylene oxide and as low as 1:20 or 4% ethylene oxide.

Applicant claims 22% to 90%, and 30% to 70%, by weight of ethylene oxide.

Upon conversion of number of molecular units to weight percent, Bonte's ratio reads on applicant's ratio.

Bonte discloses (column 2, lines 9 – 18, table 1) a block copolyetherester made of polyester blocks and poly(alkylene oxide) polyol blocks with a ratio between the soft segments and the hard segments falling within a range such that the Shore D hardness of the segmented polyetherester lies between 75 and 25, which falls within applicant's ratio ranges.

Bonte discloses (column 2, lines 19 – 23) an Mn value of 300 – 4000 of the soft segment (i.e., the poly(alkylene oxide)polyol segment), which falls within applicant's range.

Bonte is silent on the unsaturation content of the polyol. However, Bonte's polyester is substantially identical to the claimed polyester, encompassing the molecular weight of the polyalkylene oxide claimed by applicant with the same ratio of EO to PO. Since the molecular weight is related to the amount of unsaturation, as described by Applicant on page 12 of the instant specification, Bonte's polyol inherently contains the same unsaturation as claimed by Applicant. Alternatively, Applicant submits that Bonte's polyol has an unsaturation of 36 meq/Kg, as shown in Table 1 of the instant application, while Applicant claims an unsaturation of less than 35 meq/Kg, where said numbers of 35 and 36 are substantially identical, within experimental error. It has also been

held that a range of even “more than 5%” would overlap a disclosure of 1-5%.

Additionally, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. It would also have been obvious to one of ordinary skill in the art to have varied the unsaturation of the polyol through routine experimentation, such as by using a polyol with higher MW, to arrive at the desired results of a product with the proper properties for its intended use, such as tensile strength, tear resistance, etc.

***Claim Rejections - 35 USC § 103***

**Claims 6 – 10, 12, 13, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonte et al (US 6,380,290).**

Bonte’s disclosure is discussed above and incorporated herein by reference.

Applicant claims the process according to claim 1, wherein in the block copolyetherester:

- The average degree of polymerization of the polyester block is 3.5,
- The block copolyetherester has a Mn of at least 25,000 g/mol.

Bonte discloses the same reactants that make up the copolyetherester and the same MW of the polyalkylene oxide polyol portion of the copolymer but is silent on the degree of polymerization and the Mn of said copolymer. The degree

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of polymerization and the Mn are determined by experimental conditions, such as purity of the reactants, time or temperature of reaction, catalysts, the reactants used in the polyester segment, etc. By changing the experimental conditions one can control the degree of polymerization and the Mn. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to obtain the degree of polymerization and the Mn desired through routine optimization of the process as described above and thereby obtain the invention.

Applicant claims butane diol as the alkylene diol. Bonte also discloses (abstract, column 1, lines 55 - end, table 1, claim 1) an alkylene diol. Bonte uses PL 380, PL 580 and PL 720, which are products sold by DSM made of ethylene oxide-capped polypropylene oxide and polybutylene terephthalate. Polybutylene terephthalate is made from butane diol and terephthalic acid, reading on applicant's butane diol.

Applicant claims butylene terephthalate. Bonte discloses (abstract, column 1, lines 55 - end, table 1, claim 1) the use of polybutylene terephthalate.

Applicant claims the addition of at least one additive. Similarly, Bonte discloses (abstract, column 1, lines 55 - end, column 2, lines 24 – 59, column 3, lines 7 – end, claim 1) the addition of branching agents, stabilizers and other additives.

**Claims 4, 5, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonte et al (US 6,380,290) in view of Smith (US 4,562,232).**

Bonte's disclosure is discussed above and incorporated herein by reference.

Bonte discloses the use of PL 380 which has an unsaturation of 36 meq/Kg, reading on Applicant's claim of 35meq/Kg, within experimental error. However, Bonte fails to disclose an unsaturation of less than 30, 25 and 15 meq/Kg.

**Smith** discloses (abstract, column 1, lines 55 – 60, column 3, lines 31 - 68) a copolyetherester copolymer comprising a polyester segment, preferably polybutylene terephthalate, and a polyalkylene ether glycol segment, preferably polyethylene ether glycol end capped with polypropylene ether glycol. The molecular weight of the polyalkylene ether glycol ranges from 900 to 12,000, thus encompassing Applicant's range of 2,500 – 5,000.

Making high molecular weight of polyalkylene ether glycol is possible when the degree of unsaturation is very low which allows the reaction to continue in order to form said high molecular weight. It would have been obvious to one of ordinary skill in the art to have replaced Bonte's polyalkylene ether glycol with Smith's polyalkylene ether glycol which has a MW as high as 12,000, therefore necessarily having low unsaturation, in order to produce a copolyetherester with the desired properties such as better mechanical properties because of the longer polyalkylene ether glycol soft segments.

**Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonte et al (US 6,380,290) in view of Tieke, Bernd (US 5,122,303).**

Bonte's disclosure is discussed above and incorporated herein by reference.

Applicant claims copolyetherester in elastic fiber or film.

Bonte discloses (abstract, claim 9) an article of manufacture comprising the copolyetherester and discloses that said polymer is particularly suited for applications that need to withstand high temperatures. Bonte, however, does not teach fibers or films.

**Tieke** discloses (abstract, column 1, lines 40 – 55, column 2, lines 28 – 34) a polyetherester copolymer prepared from:

- a dihydroxy terminated poly(oxyalkylene) from polyethylene glycol or polypropylene glycol or combination of both,
- an aromatic dicarboxylic acid or ester forming derivative thereof
- and an aromatic diol,
- The copolymer is used in films and coatings.

Tieke discloses a polyetherester that is substantially identical to Bonte. Thus, it would have been obvious to one of ordinary skill in the art to have made films and coating using Bonte's polyetherester since Tieke expressly teaches suitability of polyetheresters that are comparable to those of Bonte for making films.

***Response to Arguments***

Applicant's arguments with respect to claims 1 - 22 have been considered but are moot in view of the new ground(s) of rejection.

Applicant submits that Bonte does not explicitly disclose the amount of unsaturation of the polyalkylene oxide polyol and it is only known because the Applicants have measured it.

(1) Although Bonte did not measure the amount of unsaturation, said amount is still inherently present in the polyol.

(2) Applicant claims less than 35 meq/Kg while Bonte's polyol contain 36 meq/Kg, which is, within experimental error, substantially the same amount. Note especially the units used of milli-equivalents to kilograms, which is a small number where the difference between 35 and 36 is negligible.

(3) Smith discloses a MW of up to 12,000, whereas Applicant only reaches a MW of 5,000. Smith's high MW can only be achieved if a very low amount of unsaturation is present, otherwise the reaction stops due to the presence of unsaturation and the MW remains low.

Applicant submits that low unsaturation can only be obtained by certain after-treatment, not typically performed.

Bonte and Smith disclose molecular weight as high as 4,000 and 12,000, respectively, which can only be obtained by low unsaturation, even if the after-treatment mentioned (but not claimed) by Applicant is not disclosed.

Applicant submits that there is no motivation for a person to optimize the level of unsaturation since Bonte does not disclose any mention of it.

Bonte uses a polyol with the same level of unsaturation as claimed by Applicant (35 vs. 36 meq/Kg); although Bonte did not discuss it, said unsaturation is still present. A person of ordinary skill in the art would have known to use a polyol with higher molecular weight for the desired properties, where higher MW means that there had to be lower unsaturation (so the polyol could grow to said high MW). Smith discloses MW as high as 12,000, where the level of unsaturation must necessarily be lower than Applicant's maximum range since Applicant claims a maximum MW of 5,000.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANCES TISCHLER whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/ Irina S. Zemel/  
Primary Examiner, Art Unit 1796

Frances Tischler  
Examiner  
Art Unit 1796

/FT/